WHAT IS CLAIMED IS:

1. A method for the transmission of data in an ATM transmission system, comprising the steps of:

supplying digital data of a specific plurality of data channels parallel to an input side of a sender;

converting said digital data into data units that respectively comprise an identical plurality of bits from each of said data channels;

serially transmitting individual said data units in a form of cells that are respectively composed of a specific plurality of said data units, each cell having a specific, characteristic bit sequence;

receiving, by a receiver said serially transmitted data units;

monitoring, by said receiver, said received data units for an occurrence of said characteristic bit sequence and, after identifying said characteristic bit sequence, identifying a first data unit of a cell corresponding to said characteristic bit sequence;

successively dividing, beginning with said first data unit of said cell corresponding to said characteristic bit sequence, individual bits of each said data unit of said corresponding cell onto a plurality of parallel data channels of an output side of said receiver corresponding in number to said plurality of data channels of said input side of said sender and said bits of each said data unit are output parallel via corresponding said data channels of said output side.

2. A method according to claim 1, wherein said characteristic bit sequence transmitted within each cell comprises 8 bits.

3. A method according to claim 2, further comprising the step of setting, in alternation from cell to cell, the most-significant bit of said characteristic bit sequence before said step of transmitting said characteristic bit sequence.

4. A method according to claim 3, wherein all bits other than said most-significant bit of said characteristic bit sequence are the same for each cell.

5. A method according to claim 1, wherein said plurality of parallel data channels of said input side is four, said digital data being synchronously supplied to said four data channels of said input side in parallel form in said step of supplying digital data.

6. A method according to claim 5, wherein each said data unit that is transmitted in said step of serially transmitting individual said data units comprises one synchronously read-in bit from each said data channel said synchronously read-in bit of a specific data channel being arranged at a same location in every said data unit.

7. A method according to claim 5, wherein said step of serially transmitting individual said data units comprises transmitting said characteristic bit sequence in two successive data unitswith respectively four bits in each said successive data unit.

8. A method according to claim 1, wherein said step of serially transmitting individual said data units transmits said characteristic bit sequence before a first data unit of a corresponding cell that comprises bits of said data channels of said input side.

9. A method according to claim 1, wherein said step of serially transmitting said individual data units comprises transmitting said individual data units via an optical transmission medium.

10. A method according to claim 1, wherein:

said step of converting said digital data into data units is performed by clocking said digital data of said individual, parallel data channels of said input side to be serially transmitted; and

said step of successively dividing individual bits of every serially transmitted data unit is performed by clocking said individual bits onto said individual, parallel data channels of said output side and are output.

11. A method according to claim 1, wherein each said cell, including said characteristic bit sequence, comprises 64 bytes that are transmitted in 128 data units with respectively four bits in said step of transmitting individual said data units.

12. A method according to claim 1, wherein each said cell encompasses a first group of data units that comprise control information and a second group of data units that comprise payload information, said first group comprising said characteristic bit sequence for said corresponding cell.

13. A method according to claim 11, wherein said first group comprises 16 bytes and said second group comprises 48 bytes.

14. An ATM transmission system, comprising:

a sender that converts digital data of a specific plurality of data channels supplied to it at an input side into data units such that each data unit

comprises an identical plurality of bits from each said data channel, and serially transmits individual said data units via a transmission medium in a form of cells, each said cell comprising a specific plurality of data units , each said cell respectively comprising comprises a specific, characteristic bit sequence;

a receiver that receives said serially transmitted data units from said sender and monitors said data units for an occurrence of said characteristic bit sequence, said receiver, after detecting said characteristic bit sequence in said serially transmitted data units, determines a first data unit of the cell corresponding to said characteristic bit sequence and, beginning with said first data unit, successively divides individual said bits of each said data unit of a corresponding cell onto a plurality of parallel data channels of an output side corresponding in number to said plurality of data channels of said input side and outputs said individual said bits of each said data unit in parallel.

15 An ATM transmission system according to claim 14, wherein said sender sends said digital data of said parallel data channels supplied to said sender, to said receiver according to the method of claim 1 and are output at said receiver via said parallel data channels of said output side.

16. An ATM transmission system according to claim 14, wherein said parallel data channels supplied to said sender utilize a data transmission rate of approximately 830 Mbit/s; and

said transmission medium being an optical medium capable of transmitting data serially with a data rate of approximately 3.3 Gbit/s.

17. A method according to claim 12, wherein said first group comprises 16 bytes and said second group comprises 48 bytes.approximately 3.3 Gbit/s.